What is claimed is:

1. A device for inserting gas into chemical reactor tubes, comprising:

a wand body having upper and lower ends;

a handle mounted on said wand body;

a test gas path including a constant flow device for creating a controlled gas flow and a pressure drop;

at least one injector tube mounted adjacent said lower end;

said injector tube including a tubular member, having upper and lower edges, an outer surface, and an inner surface defining an internal gas path which is part of said test gas path, said internal gas path defining a lower outlet;

said outer surface defining a recess extending from said upper edge; and

a flexible sleeve mounted over said tubular member, said flexible sleeve having an upper end and a lower end, both of said upper and lower ends being sealed against said tubular member;

and an inflation tube defining an inflation gas path between said tubular member and said sleeve which permits gas to be injected under pressure between said tubular member and said sleeve in order to inflate said sleeve to seal against the interior of an chemical reactor tube to be measured by the device, said inflation tube lying in said recess.

2. A device for inserting gas into chemical reactor tubes as recited in claim 1, and further comprising a plurality of said injector tubes mounted adjacent said second end.

3. A device for inserting gas into chemical reactor tubes as recited in claim 2, wherein said injector tubes are mounted adjacent to each other linearly.

4. A device for inserting gas into chemical reactor tubes as recited in claim 3, wherein said device has a horizontal frame member adjacent its bottom end, and further comprising mounts slidably received in said frame member for mounting said injector tubes; and further including means for fixing the position of said mounts and said injector tubes on said frame member.

5. A device for inserting gas into chemical reactor tubes as recited in claim 1, and further comprising an interlock switch which prevents the sleeve from being inflated unless said tubular member is properly inserted into its respective chemical reactor tube.

6. A device for inserting gas into chemical reactor tubes as recited in claim 5, wherein said constant flow device is selected from the group consisting of needle valves, sonic nozzles, orifice plates, and precision orifices.

7. A device for inserting gas into chemical reactor tubes as recited in claim 6, and further comprising a pressure sensor on said wand, for measuring the pressure in said internal path.

8. A device for measuring the gas flow through chemical reactor tubes, comprising:

a wand defining a test gas path and including at least one tubular member defining an internal gas path in communication with said test gas path for inserting test gas into a chemical reactor tube;

a pressure sensor associated with said wand which measures the pressure in said internal gas path;

a means for transmitting the pressure measurement for a specific chemical reactor tube electronically from said pressure sensor to a remote location;

a means for receiving said pressure measurement at said remote location; and

display means for graphically displaying the layout of the tubes and the pressure data as it is being collected.

9. A device as recited in claim 8, wherein said wand includes a plurality of said tubular members.

10. A device as recited in claim 9, wherein said tubular members are mounted in a linear arrangement.

11. A device as recited in claim 10, wherein said tubular members include inflatable seals for sealing against the interior of the chemical reactor tubes.

12. A device as recited in claim 8, and further comprising a constant flow device in said test gas path.

13. A device as recited in claim 8, and further comprising a measuring device on said wand for automatically measuring the position of said wand relative to a reflecting surface.

14. A method for measuring the back pressure in open-end chemical reactor tubes, comprising the steps of:

inserting a hollow tube body into one of said chemical reactor tubes;

sealing between the hollow tube body and the chemical reactor tube;

introducing a controlled gas flow through said hollow tube body into said chemical reactor tube;

measuring the pressure in said hollow tube body;

associating the pressure measurement with the particular chemical reactor tube being measured;

electronically transmitting the pressure measurement and data identifying the particular chemical reactor tube to a remote location;

receiving the pressure measurement and data at the remote location; and

graphically displaying the measurement at the remote location as the measurement is taken.

15. A method as recited in claim 14, and further comprising the step of electronically comparing the measurement to predetermined criteria; making a pass-fail decision for the particular tube being measured; and recording the measurement and the pass-fail decision for the particular tube.

16. A method for measuring the back pressure in open-end chemical reactor tubes, comprising the steps of:

mounting a plurality of hollow tube bodies on a single wand with spacings corresponding to the spacings of the chemical reactor tubes;

inserting said plurality of hollow tube bodies as a single unit into a corresponding plurality of said chemical reactor tubes;

inflating a plurality of seals to seal between the hollow tube bodies and their respective chemical reactor tubes;

introducing a controlled gas flow through said hollow tube bodies into their respective chemical reactor tubes;

measuring the pressure in said hollow tube bodies; and

associating the pressure measurements with the particular chemical reactor tubes being measured.

17. A method as recited in claim 16 and further comprising the step of measuring the position of said wand relative to a fixed point and automatically keeping track of the particular chemical reactor tubes being measured based on the position of said wand relative to said fixed point.

18. A method as recited in claim 17, wherein said position is measured using a laser device mounted on said wand.

19. A method for making decisions about the operation of a chemical reactor including a large number of open-ended chemical reactor tubes, comprising the steps of:

injecting gas into the chemical reactor tubes;

measuring the back pressure in said chemical reactor tubes;

electronically transmitting the measurements, together with identifying information about the chemical reactor tubes for which the measurements are being taken, to a remote computer;

comparing the measurements to predetermined criteria to determine which chemical reactor tubes need further attention; and

providing a visual display at the remote location indicating which chemical reactor tubes need further attention.

20. A method as recited in claim 19, wherein said measuring, transmitting, comparing, and providing a visual display are done electronically and substantially simultaneously.

21. A method as recited in claim 20, and further comprising the step of performing statistical analysis on the measurements at the remote computer.

22. A method as recited in claim 20, and further providing cost information output to indicate the cost of leaving the chemical reactor tubes as they stand and the benefit of making corrections.

23. A method as recited in claim 20, and further showing on a display screen the chemical reactor tubes as they are being measured, with color indications showing how the chemical reactor tube measurements compare to the specifications.

24. A method as recited in claim 23, wherein said color indications include bands of color to show how a particular chemical reactor tube has performed against the preset criteria as the measurement has been repeated.

25. A method for identifying, recording, and tracking information about chemical reactor tubes over the useful life of the chemical reactor, comprising the steps of:

creating an initial electronic file for the chemical reactor, defining the positions of the chemical reactor tubes and the conditions of each position, including defining which positions contain thermocouples, which contain support structure, and which chemical reactor tubes are plugged, and storing that data at a first location;

then, using a wand at a remote second location to measure the back pressure in the chemical reactor tubes, creating an electronic data file representing the back pressure measurements for the tube positions, transmitting the electronic back pressure data to said first location, and storing the electronic back pressure data at said first location; and

indicating said chemical reactor tube data graphically at the first location.

26. A method as recited in claim 25, and further comprising the step of repeating the back pressure measurement, and storing each set of measurements at said first location, so as to permit the plant engineer to study the history of the chemical reactor.

27. A method as recited in claim 14, wherein said tube includes an axially-oriented obstruction, and said hollow tube body fits over said obstruction.

28. A device for inserting gas into chemical reactor tubes as recited in claim 3, and further comprising an umbilical gas path and injector tube flexibly connected to said wand body.

29. A method as recited in claim 16, and further comprising the step of mounting an umbilical hollow tube body on said wand by means of a flexible tube for measuring hard-to-reach reactor tubes.

30. A method for correcting problems with chemical reactor tubes, comprising the steps of:

providing a device that includes electronic storage, including a list of the positions of the tubes that need to be fixed;

providing an electronic measurer on said device; and

using said electronic measurer to locate the device at the positions of the tubes that need to be fixed.